

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A memory device including a memory element comprising:

a memory layer containing 2 at% or more and less than 25 at% of at least one element selected from the group consisting of Ge, Sb, and Bi, 40 at% or more and 65 at% or less of Te, and 20 at% or more and 50 at% or less of at least one element selected from ~~the group 2b, group 1b, groups 3a to 7a, and group 8 elements~~ Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd, and storing information by causing reversible phase-change between a crystal phase and an amorphous phase; and

an electrode formed on both surfaces of the memory layer.

2. (currently amended) A memory device according to claim 1, wherein said one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La,

Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the groups~~ is Zn or Cd of the group 2b.

3. (currently amended) A memory device according to claim 1, wherein said one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the group elements comprising the group 2b, group 1b, groups 3a to 7a, and group 8 elements are~~ is partially or entirely replaced with nitrogen.

4. (currently amended) A memory device according to claim 1, wherein the memory layer contains 5 at% or more and less than 20 at% of at least one element selected from the group consisting of Ge, Sb and Bi, 45 at% or more and 60 at% or less of Te, 25 at% or less of at least one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the group 2b, group 1b, groups 3a to 7a, and group 8 elements~~.

5. (original) A memory device according to claim 1, wherein the memory device is used within an atmosphere at 145°C or higher.

6. (currently amended) A memory device according to claim 1, further comprising a region, ~~[[in]]~~ adjacent to the memory layer, in which the content of Zn or Cd is higher by 10 at% or more than that of the layer of the memory layer containing Zn or Cd.

7. (original) A memory device according to claim 1, wherein the memory device transmits 30% or more of recording light or reading light.

8. (currently amended) A memory device comprising:
a plurality of memory cells;
a plurality of word lines for selecting the plurality of memory cells;

a plurality of data lines arranged orthogonally to the plurality of word lines and reading signals from the plurality of memory cells;

wherein each of the plurality of memory cells includes:
a memory layer containing Ge or Sb, 40 at% or more of Te, 20 at% or more and 50 at% or less of at least one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the group 2b, group 1b, groups 3a to 7a, and group~~

~~8-elements~~, and recording information by causing reversible phase-change between a crystal phase and an amorphous phase; and

electrodes formed so as to sandwich the memory layer therebetween for applying a voltage to the memory layer.

9. (original) A memory device according to claim 8, wherein an insulating film is disposed between the memory layer and one surface of the electrode.

10. (currently amended) A memory device including a memory element comprising:

a memory layer containing 2 at% or more and less than 25 at% or less of Ge and Sb, 40 at% or more and 65 at% or less of Te, and at least one element selected from 20 at% or more and 50 at% or less of Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the group 2b, group 1b, groups 3a to 7a, and group 8 elements~~, and storing information by causing reversible phase-change between a crystal phase and an amorphous-phase; and

an electrode formed on both sides of the memory layer.

11. (currently amended) A memory device according to claim 10, wherein said one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd ~~the groups~~ is Zn or Cd as the group 2b element.

12. (currently amended) A memory device according to claim 10, wherein the group element ~~comprising the group 2b, group 1b, groups 3a to 7a, and group 8 elements~~ are selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd partially or entirely replaced with nitrogen.

13. (currently amended) A memory device according to claim 10, wherein

the memory layer contains 5 at% or more and less than 20 at% of Ge and Sb, 45 at% or more and 60 at% or less of Te, and 25 at% or less of at least one element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd ~~the group 2b, group 1b, groups 3a to 7a, and group 8 elements~~, and nitrogen.

14. (original) A memory device according to claim 10, wherein the memory device is used in an atmosphere at 145°C or higher.

15. (currently amended) A memory device according to claim 10, further comprising, ~~[[in]]~~ adjacent to the memory layer, a region in which the content of Zn or Cd is higher by 10 at% or more than that in the layer of the memory layer containing Zn or Cd.

16. (original) A memory device according to claim 10, wherein the memory element transmits 30% or more of recording light or reading light.

17. (currently amended) A memory device comprising:
a plurality of memory cells;
a plurality of word lines for selecting the plurality of memory cells;
a plurality of data lines arranged orthogonally to the plurality of word lines and reading signals from the plurality of memory cells;
wherein each of the plurality of memory cells includes:
a memory layer containing Ge, Sb, 40 at% or more of Te, and 20 at% or more and 50 at% or less of at least one

element selected from Zn, Au, Ag, Cu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mn, Fe, Co, Ni, Rh, Pd, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, and Cd~~the group 2b, group 1b, groups 3a to 7a, and group 8 elements,~~ and recording information by causing reversible phase-change between a crystal phase and an amorphous phase; and

electrodes formed so as to sandwich therebetween the memory layer for applying the voltage to the memory layer.

18. (original) A memory device according to claim 17, wherein an insulating layer is disposed between the memory layer and one surface of the electrode.